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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,552	12/08/2003	Harold M. Swartz	RRI-001	4570

7590

09/26/2005

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EXAMINER

SHIPMAN, JEREMIAH E

ART UNIT

PAPER NUMBER

2859

DATE MAILED: 09/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/731,552	Applicant(s) SWARTZ ET AL.	
	Examiner Jeremiah Shipman	Art Unit 2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 18, 19/18, 20/18, 22/18, 23/18, 24/18, 25/18, 26/18, and 27/18 is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☒ Claim(s) 3, 4/3, 5/3, 6, 10, 13, 20/16-17, 24/16-17 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 August 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Continuation of Disposition of Claims: Claims rejected are 1-2, 4/2, 5/2, 7-9, 11-12, 14-17, 19/17, 21, 22/16-17, 23/16-17, 25/16-17, 26/16-17, 27/16-17 .

Specification

Color photographs and color drawings are not accepted unless a petition filed under 37 CFR 1.84(a)(2) is granted. Any such petition must be accompanied by the appropriate fee set forth in 37 CFR 1.17(h), three sets of color drawings or color photographs, as appropriate, and, unless already present, an amendment to include the following language as the first paragraph of the brief description of the drawings section of the specification:

The patent or application file contains at least one drawing executed in color. Copies of this patent or patent application publication with color drawing(s) will be provided by the Office upon request and payment of the necessary fee.

Color photographs will be accepted if the conditions for accepting color drawings and black and white photographs have been satisfied. See 37 CFR 1.84(b)(2).

In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

Applicant is required to submit a proposed drawing correction in response to this Office action. However, formal correction of the noted defect can be deferred until the application is allowed by the examiner.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 7 and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims recite the limitation "magnetic field is generated perpendicular to at least one chosen tooth" in line 2. This is unclear since the term perpendicular defines a relationship between a first direction or plane and a second direction or plane; the first direction is well defined by the magnetic field, but the definition of the second direction or plane is unclear as a tooth is an object with substantial extent in three directions.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 4/2, 5/2, 8, 9, 11, 14, 15, 16, 17, 19/17, 22/16-17, 23/16-17, 25/16-17, and 27/16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Miyake et al. (Appl Rad Isot, 2000).

Regarding claims 1, 15, 16, and 17, Miyake et al. discuss a dosimetry assessment apparatus, system, and method for determining the degree of exposure of a living subject to ionizing radiation, wherein the living subject has been previously exposed to an unknown but potentially harmful dose of ionizing radiation ("1.

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Introduction", par 1, lines 1-5), comprising a magnetic field generator controlled to generate a stable and substantially uniform magnetic field of about 10 to 100 mT with a magnetic field uniformity of about 0.25% ("2.3. EPR measurements", par 2, lines 4-5; 400G is 40 mT) and a selected magnetic modulation field of about +/- 0.1 to 0.5 mT with a magnetic field uniformity of about +/- 10% over the region of interest ("2.3. EPR measurements", par 2, line 7, 1.6G is 0.16 mT), a resonator construct adapted for engagement with at least one chosen tooth in the mouth of a living subject ("2.3. EPR measurements", par 1, lines 9-12; Fig 3) and whose operation allows for the emission of a radiowave of appropriate frequency for EPR measurement which is applied on-demand through the substance of the chosen tooth ("2.1.2. Animals", par 1), and an EPR spectrometer which is integrated with said magnetic field generator and whose operation generates a test EPR spectrum which can show the presence and absence of a net magnetic moment within the substantially uniform magnetic field occurring in response to a radiowave of appropriate frequency being applied to the chosen tooth in the mouth of the living subject ("2.3. EPR measurements", par 1; Fig 3b), electronic detection equipment able to detect the presence or absence of a net magnetic moment within a test EPR spectrum ("2.3. EPR measurements", par 1; Fig 4, 6), electronic operating controls integrated into the detection assembly, and a power supply integrated within the detection assembly (these are inherent in the Varian E-112 spectrometer used; "2.3. EPR measurements", par 1, line 14).

Regarding claims 2, 4/2, 5/2, 15, 17, and 19/17, Miyake et al. further discuss obtaining an EPR spectrum from at least one targeted tooth and comparing the test

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spectrum with a reference data library of EPR spectra to detect the presence or absence of net magnetic moment within the EPR test spectrum, wherein the comparison of the EPR spectra provides a measure of the subject's previous exposure to ionizing radiation ("3. Results" par 5; Fig 9).

Regarding claims 8, 9, 22/16-17, and 23/16-17, Miyake et al. further discuss that part of the resonance construct is curved and oval in configuration for engagement with a chosen tooth (Fig 2; Fig 3).

Regarding claims 11 and 25/16-17, Miyake et al. further discuss that the magnetic field generator is a manufactured electromagnetic structure (this is included in the Varian E-112, "2.3. EPR measurements", par 1, line 14).

Regarding claims 14 and 27/16-17, Miyake et al. further discuss that their resonance construct can emit and apply a radio wave at a frequency ranging from about 0.3 – 3.0 GHz ("EPR measurements", par 1, line 3; "3. Results", par 5).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12 and 26/16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyake et al. in view of Bales et al. (US 5,233,303). Miyake et al. do not teach the EPR dosimeter apparatus being transportable on demand. Bales et al. teach an combined EPR spectrometer apparatus (col 1, lines 44-51) operating at a

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magnetic field strength of 70 mT (col 2, lines 61-66) and a radiowave frequency of about 2 GHz (col 3, lines 26-35) which is readily transportable and may be carried to the field to do specified analysis (col 1, line 32-36, col 2, lines 61-64). It would have been obvious to one of ordinary skill in the art at the time of the invention to use a readily transportable spectrometer apparatus such as the one taught by Bales et al. in the EPR dosimeter of Miyake et al., in order to facilitate the use of the dosimeter in the field (Bales, col 1, lines 32-36; Miyake et al., "5. Conclusion", par 1, lines 1-6).

Allowable Subject Matter

Claims 3, 4/3, 5/3, 6, 10, 13, 20/16-17, and 24/16-17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 18, 19/18, 20/18, 22/18, 23/18, 24/18, 25/18, 26/18, and 27/18 are allowed.

The following is a statement of reasons for the indication of allowable subject matter:

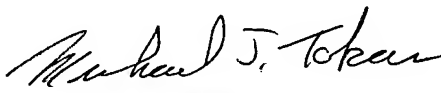
Regarding claims 3, 4/3, 5/3, 18, 19/18, 22/18, 23/18, 25/18, 26/18 and 27/18, the prior art fails to show or fairly suggest the comparison of the test EPR spectrum to mathematically modeled spectra in combination with the other limitations of the claims.

Regarding claims 6 and 20, the prior art fails to show or fairly suggest the magnetic field generator being ergonomically configured in combination with the other limitations of the claims.

Regarding claims 10 and 24, the prior art fails to teach or fairly suggest the magnetic field generator being composed entirely of naturally occurring and intrinsically magnetic materials in combination with the other limitations of the claims.

Regarding claim 13, the prior art fails to teach or fairly suggest a transportable apparatus massing less than 100 kg in combination with the other limitations of the claims.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Maier et al. (US 6,791,324) discuss a probehead for an EPR dosimeter and EPR dosimetry in general. Pass (US 5,818,056) discloses a method in vivo human dosimetry based on optically stimulated luminescence (OSL) in dental enamel. Oka et al (Appl Radiat Isot 47) discuss a portable EPR spectrometry apparatus for (high frequency, in vitro) EPR dosimetry. Swartz et al (US 5,494,030) discuss an EPR spectrometer for performing in vivo measurements on humans and animals. Haskell et al. (Rad Res 148) discuss the general state of the art of EPR dosimetry.


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